Second Five-Year Review Report

for
LaGrand Sanitary Landfill
LaGrand Township
Douglas County, Minnesota

February, 2004

PREPARED BY:

U. S. EPA - REGION 5

Approved by:

Richard C. Karl
Acting Director, Superfund Division

2-24-04
Date

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Attachments

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
EPA	United States Environmental Protection Agency
FSR	Final Site Remedy
HRL	Health Risk Limit
GCL	Geosynthetic Clay Liner
GWOU	Groundwater Operable Unit
LEL	Lower Exposive Limit
MCL	Maximum Contaminate Limit
MHD	Minnesota Health Department
MPCA	Minnesota Pollution Control Agency
NPDES	National Pollutant Discharge Elimination
NPL	National Priority List
NOC	Notice of Compliance
O & M	Operation and Maintenance
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCOR	Preliminary Close Out Report
PRP	Potentiall Responsible Party
PSFD	Pilot Scale Field Demonstration

RA	Remedial Action
RCRA	Resource Conservation and Recovery Acg
RD	Remedial Design
RAO	Remedial Action Objective
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SCOU	Source Control Operable Unite
VOC	Volatile Organic Compounds

Executive Summary

The selected remedial alternative for the LaGrand Sanitary Landfill Superfund Site was continued groundwater monitoring at the Landfill, permanent closure of the on-site shop well, the posting of "No Trespassing signs," installation of site access control gates, stabilization of eroded landfill slopes, restoration of the landfill western slope and soil borrow area, miscellaneous site cleanup, and annual inspection and site maintenance. The selected alternative includes the following major components.

- Long-term monitoring of groundwater and combustible gas to verify that the level of threat posed by the contaminants of concern remains low and that the landfill does not generate potentially explosive levels of combustible gas;

- The conversion of a combustible gas monitoring well to a gas vent to assure that combustible gas does not accumulate at the single point where the soil gas level was measured at greater than 100% of the lower explosive limit (LEL);

- The permanent sealing and abandonment of the on-site Shop Well in conformance with the Minnesota Water Well Code, Minn. Rules, Chapter 4725.2700, to assure that this well will not be used as a potable water source;

- The stabilization of the west slope of the Landfill and the covering of exposed waste on the northwest corner to assure that the existing landfill cover, which is providing an effective barrier to infiltration, remains effective;

- The sloping and reconstruction of the borrow pit area adjacent to the west slope of the Landfill to assure the long-term integrity of the cover system;

- Institutional controls in the form of site access restrictions, and the possible use of deed restrictions;

- Maintenance of the existing final cover system so as to reduce the future potential for infiltration into the waste mass and the subsequent leaching of contaminants;

- Observance of Minnesota Environmental Response and Liability Act prohibitions against the disturbance of the Landfill final cover and monitoring systems; and

- Observance of the Minnesota Water Well Construction Code, Minn. Rules Chapter 4725.2000, which regulates the location of future potable wells near the Landfill.

The Site achieved construction completion with the signing of the Final Close Out Report on August 7, 1995. The trigger for this five-year review was the actual completion of the first five-year review on March 03, 1999.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD), the remedy is functioning as designed, the long-term monitoring of groundwater and combustible gas, landfill slope stabilization, the sealing of one on-site well and institutional controls has achieved its design criteria by significantly reducing both the production of leachate and toxicity of the compounds released from the landfill, and contaminant concentrations in the groundwater.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: LaGrand Sanitary Landfill

EPA ID *(from WasteLAN)*: MND981090483

Region: 5	**State:** MN	**City/County:** Douglas

SITE STATUS

NPL status: Final x Deleted Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction ☐ Operating x Complete

Multiple Ous? YES x NO	**Construction completion date:** 08 / 07/1995

Has site been put into reuse? ☐ YES x NO

REVIEW STATUS

Lead agency: EPA x State Tribe Other Federal Agency _____

Author name: Gladys Beard

Author title: NPL State Deletion Process Manager	**Author affiliation:** U. S. EPA, Region 5

Review period:** 09 /01 /2003 to 02 /03/2004

Date(s) of site inspection: September 12, 2003

Type of review:

X Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: ☐ 1 (first) x (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____
☐ Construction Completion x Previous Five-Year Review Report
☐ Other (specify) _____

Triggering action date *(from WasteLAN)*: 03 /03 /1999

Due date *(five years after triggering action date)*: 03 /03 /2004

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

FIVE-YEAR REVIEW SUMMARY FORM, cont'd

Issues:

Continue with routine site maintenance including annual mowing of the vegetative cover and site inspections of the cover. Continue with groundwater and surface water sampling program. The majority of the wells are sampled 3 times per year and continued evaluation is being made to ascertain whether this frequency is necessary.

Recommendation and Follow-up Actions:

All settlement areas should be filled and graded to promote surface water run-off. Gas probes should be sampled on a quarterly basis (four times per year). Because of the remote location of this site, the site poses little risk for landfill gas migration. The broken or damaged gas probe GW4S should be abandoned. In addition, gas probes GW-4D, GW-8D and GW-GS, which are located too close to the landfill footprint, should also be abandoned. A new gas probe should be installed on the western side of the landfill near the property boundary by GW-8S. Thought should also be given to install a gas probe northeast of the landfill footprint. The site should be surveyed after this work has been completed to obtain an updated topographic map of the site with all current monitoring points properly located. The final cover could be upgraded to current solid waste standards based on the risk posed by either groundwater or gas migration. At this time, the minimal gas migration at the site would not warrant a final cover upgrade.

The majority of the wells are sampled 3 times per year and continued evaluation is being made to ascertain whether this frequency is necessary for all wells. No groundwater remediation system is operating at the Landfill nor is it needed. The area surrounding the landfill is rural at this time, but future development may necessitate sampling of more domestic wells if placed down gradient and in close proximity to the landfill.

Maintain site in current condition including mowing of cover and repair of erosion as necessary. The MPCA will place an erosion mat on the south side of the Landfill.

Protectiveness Statement(s):

All immediate threats at the site have been addressed, and the remedy is protective in the short-term of human health and the environment.

Long-Term Protectiveness:

Long-term protectiveness at the LaGrand Sanitary Landfill Superfund site (the Site) will be achieved by continuing the long-term monitoring of the groundwater. Long-term groundwater monitoring has demonstrated that the concentrations of the chemicals of concern have declined close to or below cleanup goals. Long-term trends show significant and adequate improvements in ground water quality.

Other Comments:

None.

LaGrand Sanitary Landfill Superfund Site
Douglas County, Minnesota
Second Five-Year Review Report

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The Minnesota Pollution Control Agency (MPCA) and the United States Environmental Protection Agency (EPA), Region 5, conducted the five-year review of the remedy implemented at the Site. This review was conducted by the Project Managers for the entire site from September 2001 through February 2004. This report documents the results of the review.

This is the second five-year review for the Site. The triggering action for this five-year review is the completion of the first Five Year Review in March 03, 1999. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1: Chronology of Site Events

Event	Date
Removal Assessment	11/21/89
Proposal to the NPL	06/10/86
NPL listing	07/22/87
NPL Search	02/22/87
RI/FS complete	09/30/92
ROD signature	09/30/92
Remedial design Start	06/04/93
Remedial design Complete	06/04/93
Remedial action start	02/23/93
Remedial action complete	09/27/94
Close out report	08/07/95
Notice of intent to delete	09/05/97
Deletion from NPL	**10/23/97**
First five-year review	**03/03/99**

III. Background

Physical Characteristics

The LaGrand Sanitary Landfill (the Site or the Landfill) is located in a rural setting in west-central Douglas County, Minnesota (Figure 0) approximately 5 miles west of the town of Alexandria and approximately 3 miles south of the town of Garfield. The Site consists of 80 acres of forest, steep uncultivated hills and low lying wetlands. The main fill area occupies six acres of a small north-trending gully formed during earlier gravel mining operations. It is marked to the north, west and east by groups of large trees. The Site is located within an area of glacial deposits known as the Alexandria Moraine Complex. This moraine complex is 10 to 20 miles wide and extends northward in an area through west-central Minnesota.

Land and Resource Use

The landfill was primarily formed by the placement of waste material into a north-trending gully excavation, which had previously been formed by excavation through the center of a north-trending ridge during gravel mining operations. The depth of fill is, according to MPCA records, approximately fifty feet.

The uppermost 100 feet of sediments beneath the site consist of glacial drift deposits in a moraine setting. A sand and gravel water table aquifer exists under a portion of the site, and is overlain by a silty to sandy clay till layer which ranges in thickness from approximately 15 to 40 feet. The sand and gravel aquifer extends beneath the landfill waste mass. At other portions of the site, the till layer extends to a depth of a least 100 feet. The water table is found at depths ranging from approximately 20 to 70 feet below the surface of the hilly terrain. The sand and gravel aquifer supplies potable water to at least one dwelling south of the landfill and may supply other residential wells in the area.

History of Contamination

The LaGrande Sanitary Landfill operated from 1974 to April 1984 as a sanitary landfill accepting mixed municipal solid waste and nonhazardous industrial waste. In April 1983, the MPCA issued a Stipulation Agreement to the owner/operator, Valley Disposal Corp., for compliance with the solid waste permit for the landfill. From 1983 to 1984, various inspections by the MPCA found the landfill to be out of compliance with its operation permit. In December 1984, MPCA issued a draft amendment to the solid waste permit Stipulation Agreement to insure landfill closure by April 1985. In 1985, a final cover was placed on the landfill by the owner/operator. MPCA personnel inspected the cover in June and July of 1985 for proper slope, drainage, thickness and vegetation. The final cover ranged from 26 to over 36 inches in thickness and consisted mostly of clay with about four inches of topsoil.

Although formal closure plans were implemented by the facility operator between April 1985 and July 1986, an April 1987 MPCA site inspection noted that portions of the landfill were eroding

and that two PVC monitoring wells were not abandoned as part of site closure.

Initial Response

In late 1982 and early 1983, groundwater sampling at the site confirmed the presence of volatile organic compounds (VOCs) at low levels. Based upon the results of a Site Inspection Report prepared in August 1985, EPA and MPCA determined that organic compounds may have migrated from the landfill into the groundwater at the site, that the landfill potentially contained hazardous substances and that the potential existed for uncontrolled releases of these substances to the environment. Subsequently, the MPCA evaluated the site for inclusion on the Federal Superfund National Priorities List (NPL) and the Minnesota Permanent List of Priorities (PLP). The site was added to the NPL and the PLP in June 1987.

In July 1987, the MPCA issued a Request for Response Action to Francis C. Cosgrove, Marlin F. Torguson and Valley Disposal Corp., as owners and operators of the site, to perform a Remedial Investigation/Feasibility (RI/FS) at the site. In August1987, the MPCA issued to the same three parties a Determination That Actions would Not Be Taken In the Time and Manner Requested.

Pursuant to a Multi-Site Cooperative Agreement between U.S. EPA Region 5 and the MPCA, the MPCA served as the lead agency for the performance of an RI/FS at the site. In October 1987, MCA authorized Malcolm Pirnie, Inc. to proceed with the development of an RI/FS Workplan for the site. The Final LaGrand RI/FS Workplan was approved in October 1990. Investigation, sampling and analytical work at the site took place during the spring and summer of 1991 and the RI was completed in December 1991. The results of the RI showed either minimal or no measurable contamination in surface water, soil and air samples collected at the site. The primary migration route for potential contaminants emanating from the Landfill was determined to be through groundwater.

On August 17, 1992, EPA and MPCA released the Feasibility Study (FS) and Proposed Plan for the site and initiated the public comment period, which ended on September 15, 1992. The FS provided a summary and discussion of the sampling and analysis activities, nature and extent of contamination and the results of the baseline risk assessment performed during the RI. The FS also identified and evaluated the remedial action objectives for the site, identified and screened applicable remedial technologies, developed and screened remedial alternatives and performed a comparative analysis of the retained alternatives.

Basis for Taking Action

Contaminants
Hazardous substances that have been released at the Site in each media included:

Soil and Groundwater

1,1 Dichloroethane
1,2 Dichloroethene
1,1,2-Trichlorotrifluoroethane
1,1,1-trichloroethane
Methyl ethyl ketone
Methyl Isobutylketone
Dichloroethane
Toluene
Xylene
Methylene chloride
Acetone
Tetrahydrofuran
1,1 Dichloropropene
Benzene
Dibromochloromethane
1,1,2 trichloroethane
1,1,2,2-Tetrachloroethane
Trichloroethene
1,3 Dichloropropene
Ethylbenzene
Cumene
Ethyl ether
Styrene
Trichlorofluoromethane
1,1,2 Trichlorotrifluoroethane
Allyl Chloride
Bromoform
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroethylvinyl Ether 2
Chloromethane
Chloroform
Dibromomethane
1,1 Dichloro 1-propene
2,3 Dichloro 1-propene
Allyl Chloride
Bromodichloromethane
Bromoform
Bromomethane
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroethylvinyl Ether 2
Chloroform
Chloromethane
Dichloroacetonitrile
1,2 Dibromoethane
Dibromomethane
1,1 Dichloro 1-propene
2,3 Dichloro 1-propene
1,2 Dichlorobenzene
1,3 Dichlorobenzene
1,4 Dichlorobenzene
1,1 Dichloroethylene
1,2 Dichloroethylene cis
1,2 Dichloroethylene trans
Dichlorofluoromethane
1,1,1,2 Tetrachloroethane
1,2,3 Trichloropropane
Vinyl Chloride
Bromodichloromethane
Bromomethane
1,2 Dichlorobenzene
1,3 Dichlorobenzene
1,4 Dichlorobenzene
Dichlorodifluoromethane

IV. Remedial Actions

Remedy Selection

A Record of Decision (ROD) was signed September 30, 1992 which selected the following remedy:

1. Long-term monitoring of groundwater and combustible gas to verify that the low level of threat posed by the contaminants of concern remains low and the landfill does not generate potentially explosive levels of combustible gas;
2. The conversion of a combustible gas monitoring well to a gas vent to assure that combustible gas does not accumulate at the single point where the soil gas level was measured at greater than 100% of the lower explosive limit (LEL);
3. The permanent sealing and abandonment of the on-site Shop Well in conformance with the Minnesota Water Well Code, Minn. Rules, Chapter 4725.2700, to assure that this well will not be used as a potable water source.
4. The stabilization of the west slope of the Landfill and the covering of exposed waste on the northwest corner to assure that the existing landfill cover, which is providing an effective barrier to infiltration, remains effective;
5. The sloping and reconstruction of the borrow pit area adjacent to the west slope of the Landfill to assure the long-term integrity of the cover system;
6. Institutional controls in the form of site access restrictions, and the possible use of deed restrictions;
7. Maintenance of the existing final cover system so as to reduce the future potential for infiltration into the waste mass and the subsequent leaching of landfill contaminants;
8. Observance of Minnesota Environmental Response and Liability Act prohibitions against the disturbance of the Landfill final cover and monitoring systems; and
9. Observance of the Minnesota Water Well Construction Code, Minn. Rules Chapter 4725.2000, which regulates the location of future potable wells near the Landfill.

Remedy Implementation

The Remedial Action Contract for the site was awarded on September 16, 1993. Remedial construction activities took place at the site from October 4, 1993 through early November 1993. These activities included restoring a borrow area to the west of the landfill, the use and restoration of a second borrow area, and the required closure and/or modification of on-site wells. In addition, two site access control fences and gates were installed and three eroded areas of the landfill were repaired. Signs were posted at the gates along the south property line fence, and at the western border of the fires borrow area.

Groundwater monitoring wells and an on-site shop well were abandoned according to the requirements specified in the ROD, the RD Work Plan and the approved contract documents. Gas monitoring probes which were used during the RI and required to be monitored on a regular basis were extended to facilitate placement of fill material in the first borrow area.

On November 3, 1993, EPA and MPCA performed a final inspection of the site and determined that all required remedial construction activities had been completed. Minor punch-list items, such as minor modifications to one chain link fence, were noted and subsequently addressed, in a satisfactory manner. Because remedial construction included the seeding of the reconstructed borrow areas and the repaired portions of the landfill, the remedial action contract was not closed out until the spring of 1994, at which time a visual inspection of the site showed that the grass seed that had been placed in the fall was developing according to design specifications.

In August 1994, Barr submitted a Remedial Action Report certifying that the construction activities at the site were successfully completed. The report documents the construction activities which occurred throughout the RA, the results of the final site inspection and the approximate total costs of the RA through the completion of the RA Report. EPA reviewed the RA Report and requested several additional information items, which were provided as a letter update to the report on September 22, 1994. The RA Report was approved by EPA Region 5 on September 27, 1994.

System Operation/Operation and Maintenance

Site operation and maintenance activities to be performed at the LaGrande Sanitary Landfill includes all of the elements outlined in the site Post Closure Care Plan. Per the Minnesota Landfill Cleanup Act of 1994, the State has assumed all responsibility for O & M at the site, as well as the implementation of institutional controls called for in the ROD. These institutional controls include:

- Site access restrictions, accomplished through the construction of the fence across the access road to the site property.
- Potential use of deed restrictions to prohibit uses of the property which would interfere with the remedy.
- Observance of the Minnesota Water Well Construction Code, Minn. Rules Chapter 4725.200, regulating the location of future potable wells near the landfill.

All institutional controls have been implemented at the site by the MPCA.

There are 10 gas probes to monitor for the presence of landfill gas generated by the Landfill. In 1998, there were some low level detections of methane in monitoring probes adjacent to the fill, but no levels of concern (i.e. >25% of the lower explosive limit) were detected. These gas probes were sampled three times in 1999. For most of the monitoring points, no methane migration was detected. Gas probes 4D and 8S exhibit low levels of methane migration not greater than the lower explosive limit (LEL) or 5% methane. Both of these probes are located within 50 feet of the Landfill footprint. Monitoring probe 1S does tend to have higher methane levels above the LEL. Monitoring probe 1S is located within fifty feet of the south end of the fill area. Monitoring probes 2S and 2D are also located south of the fill area at the facility's compliance boundary, however, only one low level reading has been measured at these in 1998 and 1999. These gas

probes are sampled three times each year. Low levels (migration not greater than the lower explosive limit (LEL) or 5% methane) of migration were detected. Probe 1S frequently has higher methane readings. This probe is close to the landfill footprint. None of the probes exhibited signs of methane migration during the fall sampling round.

Three rounds of water quality are sampled each year by Interpoll Laboratories, Inc. (Interpoll) at the Landfill. The monitoring system consists of 11 wells and no surface water sampling points. The water supply well at the residence to the south is monitored annually. A map showing the location of each of the monitoring points is presented in Figure 1.

Table 2 - Annual System Operations/O&M Costs

Dates		Total Cost
From	To	
1999	2000	$ 9200.75
2000	2001	$ 10648.85

V. Progress Since the Last Five-Year Review

The last five-year review recommended some additional cleanup of old, abandoned buildings which were on the permitted property and away from the landfill footprint. The MPCA cleaned up and demolished these old buildings. Also, the domestic well associated with these buildings was abandoned according to the Minnesota Department of Health regulations.

The monitoring system has been monitored three times per year for the standard landfill parameters. Maintenance of the site currently includes mowing of cover and repair of erosion as necessary. Gas probes have been sampled quarterly.

VI. Five-year Review Process

Administrative Components

This Five-Year Review Report was written and completed by EPA, based on the technical review of the Site by members of the MPCA staff. This Five-Year Review Report was written by Gladys Beard of EPA.

From January 1, 2003 to February 1, 2004 the review team established the review schedule whose components included:

- Community Involvement;
- Document Review;

- Data Review;
- Site Inspection;
- Local Interviews; and
- Five-Year Review Report Development and Review.

Community Involvement

Notice will be made to the public announcing the Five-Year Review Report and providing a summary of Five-Year Review findings, protectiveness of the remedy, and advising the community where a copy of the review report can be found. This Five-Year Review Report can be found in the Site's Information Repository.

Document Review

This Five-Year Review consisted of a review of relevant documents including O&M records, monitoring data, and the MPCA's Annual Report from the last five years and the last Five-Year Review Report. All cleanup standards in the ROD were reviewed.

Data Review

Groundwater Monitoring

Figures 2a and 2b have been prepared to show groundwater elevation trends for shallow and deep monitoring wells. Review of groundwater data indicates that the groundwater flow direction in the surficial aquifer is to the northeast in spring and summer but changes to east southeast in the fall (Figures 3a, 4a, and 5a). This northeast flow direction is based on mounding at MP-1. After the water leaves the landfill limits, the flow changes to a southeasterly direction. Horizontal hydraulic gradients during May, August, November for the shallow flow regime are 0.011, 0.019, and 0.008, respectively. Mounding at MP-1 could be apparent and caused by MP-1 possibly being screened in a hydraulically unconnected sand stringe. The only method of confirming this is to geoprobe the area to determine stratigraphy in this area. Deeper groundwater flow maintains a south-southeasterly trend all year. The hydraulic gradients during spring, summer, and fall for the deeper flow regime, are 0.008, 0.0146, and 0.015, respectively (Figures 3b-revised, Figure 4b, and Figure 5b). Monitoring wells to the shallow and deep flow regimes are evaluated and based on well depths and mean sea level of screen (Figure 8). Figure 7 indicates that only wells in close proximity to the fill area have been impacted with VOCs. Figure 8 describes the major contaminants in MP-1, a monitoring well with fluctuating VOC concentrations. Currently, no VOCs are exceeding Drinking Water Standards.

Surface Water and Sediment Monitoring

During early phases of the characterization of this site (Remedial Investigation) there was some sampling of the surface water bodies (wetlands). No impacts were detected at that time. Additionally, the surface water bodies were found to be perched and no potential connection between the impacted groundwater and surface water exists.

Site Inspection

Sites visits have been conducted periodically throughout the review period. A site inspection was conducted in September 12, 2003 as part of the five-year Review process.

Interviews

In developing this report, U. S. EPA interviewed the MPCA to obtain information. None of the MPCA staff was able to identify any concerns regarding the Site and there had not been any emergency responses at the Site.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARS, risk assumptions, and the results of the site inspection indicates that the remedy is functioning as intended by the ROD. The stabilization and capping of the contaminated landfill has achieved the remedial objectives to minimize contaminants to groundwater and surface water and prevent direct contact with, or ingestion of, contaminants in soil and groundwater. The effective implementation of institutional controls has prevented exposure to, or ingestion of, contaminated groundwater.

Operation and maintenance (O.M.) of the cap and groundwater have been effective. O.M. annual costs are consistent with original estimates and there are no indications of any difficulties with the remedy.

No activities were observed that would have violated the institutional controls. The cap and the surrounding area were undisturbed, and no new uses of groundwater were observed. The fence around the Site is intact and in good repair.

Question B: Are the exposure assumptions, toxicity data cleanup levels and remedial action objectives (rads) used at the time of the remedy selection still valid?

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the Human Health Risk Assessment included both current exposures (older child trespasser, adult trespasser) and potential future exposures (young and

older future child resident, future adult resident and future adult worker). There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions, or the cleanup levels developed from them is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The remedy is progressing as expected and it is expected that all groundwater cleanup levels will be met within approximately the time frame stated in the ROD.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No ecological targets were identified during the baseline risk assessment and none were identified during the five-year review, and therefore monitoring of ecological targets is not necessary. All groundwater and surface water samples analyzed found no contamination of wetlands or surface water. No weather-related events have affected the protectiveness of the remedies. There is no other information that calls into question the protectiveness of the remedies. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedies are functioning as intended by the ROD. There are no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedies. There is no other information that calls into question the protectiveness of the remedies.

VIII. Issues

Table 3: Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
A detailed analysis of the monitoring system is required	N	Y
The majority of the wells are sampled 3 times per year and continued evaluation is being made to see if ascertain whether this frequency is necessary	N	Y

IX. Recommendations and Follow-up Actions

Table 4: Recommendations and Follow-up Actions

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Maintain site in current condition	A detailed analysis of the monitoring system	MPCA	MPCA	Continuous	N	Y
Continue with routine site maintenance	Ground water and methane monitoring, inspections, erosion repair and mowing will be continued	MPCA	MPCA	Continuous	N	Y

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Erosion on south of landfill	place an erosion mat south of landfill	MPCA	MPCA	9/30/2004	N	Y
Reduce the amount of sampling	Evaluate the frequency of sampling	MPCA	MPCA	Continuous	N	Y

X. Protectiveness Statement(s)

The remedy is protective in the short-term of human health and the environment. All immediate threats at the site have been addressed. All threats at the Site have been addressed with maintenance of the existing final cover system so as to reduce the future potential for infiltration into the waste mass and the subsequent leaching of contaminants, to contain contaminated groundwater discharges from the landfill.

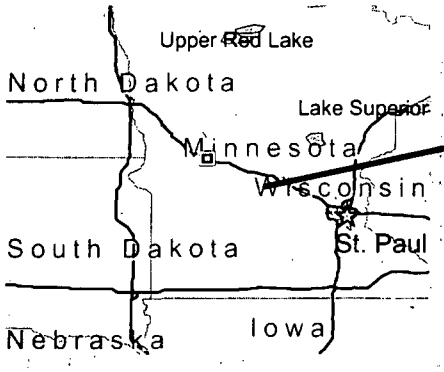
Long-term protectiveness of human health and environment will be achieved by long-term monitoring of groundwater and combustible gas to verify that the low level of threat posed by the contaminants of concern remains low and that the landfill does not generate potentially explosive levels of combustible gas.

XI. Next Review

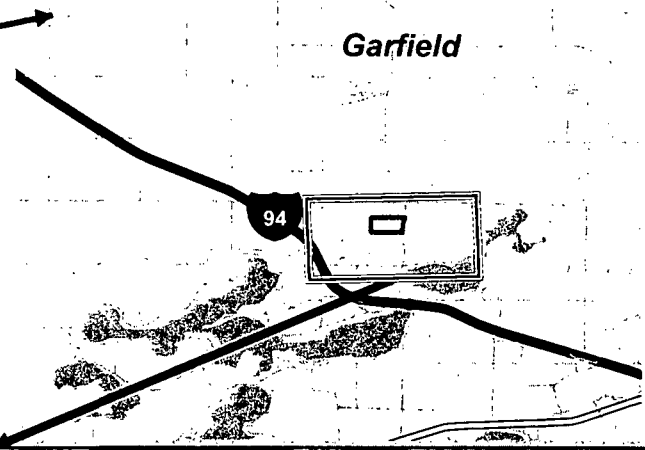
The next five-year review for the Site will be completed five years from this report in March 2009.

LaGrand Sanitary Superfund Site

1) State



2) Douglass County



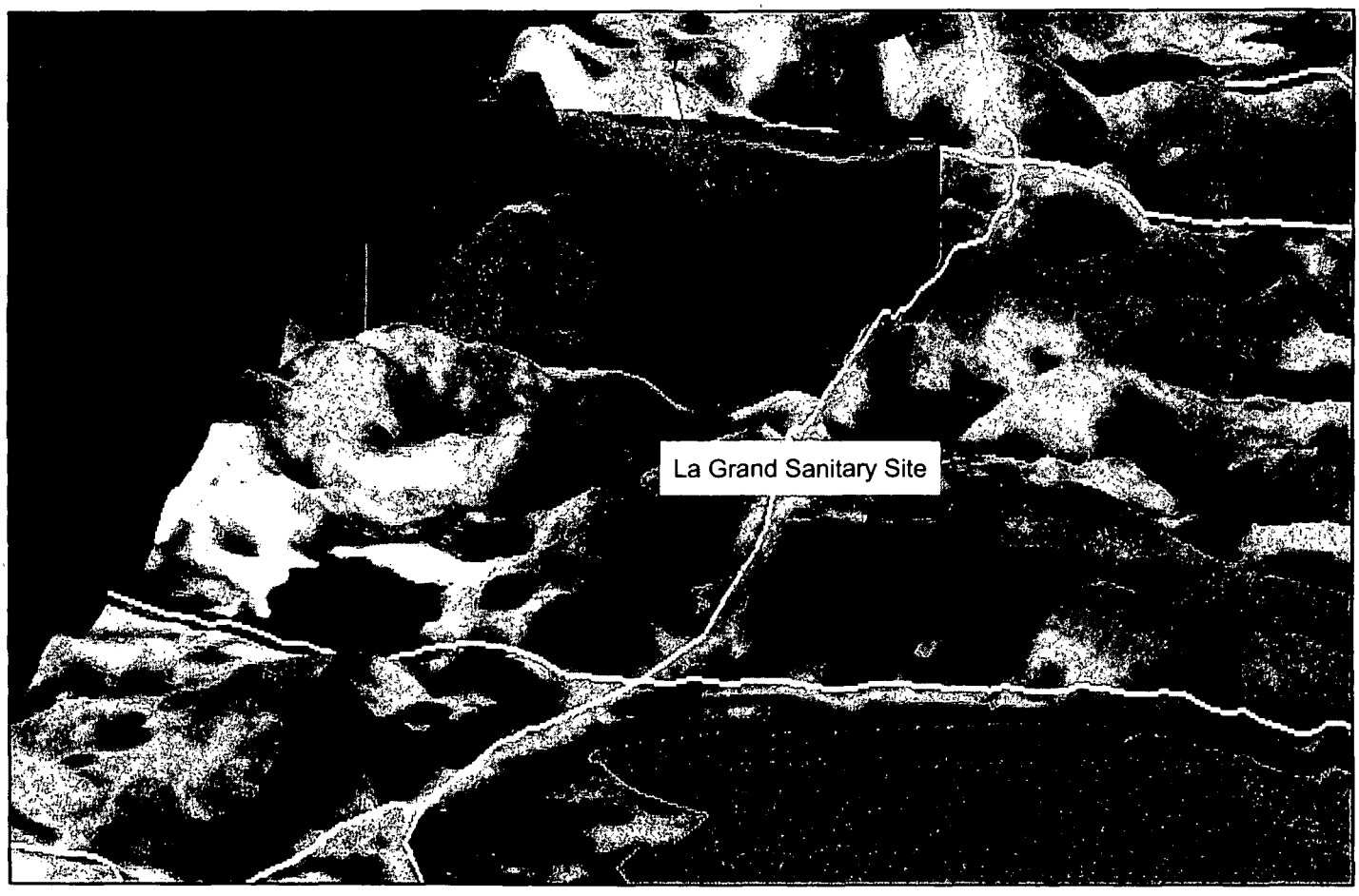
3) LaGrand Sanitary Site

EPA Region 5 Superfund Site

Plot created by Juliana R. Prospari U.S. EPA Region 5/11/2003

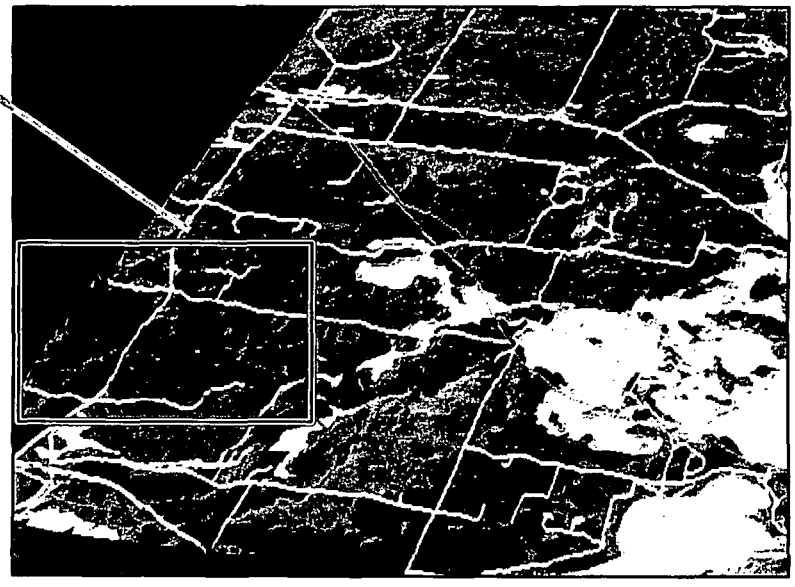
Figure 0

La Grand Sanitary Superfund Site
3D Surface Terrain Model



Elevation

- 1477 - 1493
- 1461 - 1477
- 1446 - 1461
- 1430 - 1446
- 1414 - 1430
- 1398 - 1414
- 1382 - 1398
- 1366 - 1382
- 1351 - 1366



N

Figure 2

Plot created by Juliana R. Prosperi U.S. EPA Region 5 on 8/11/2002

FIGURE 2a
LA GRANDE SANITARY LANDFILL
Elevation of Groundwater in Shallow Monitoring Wells

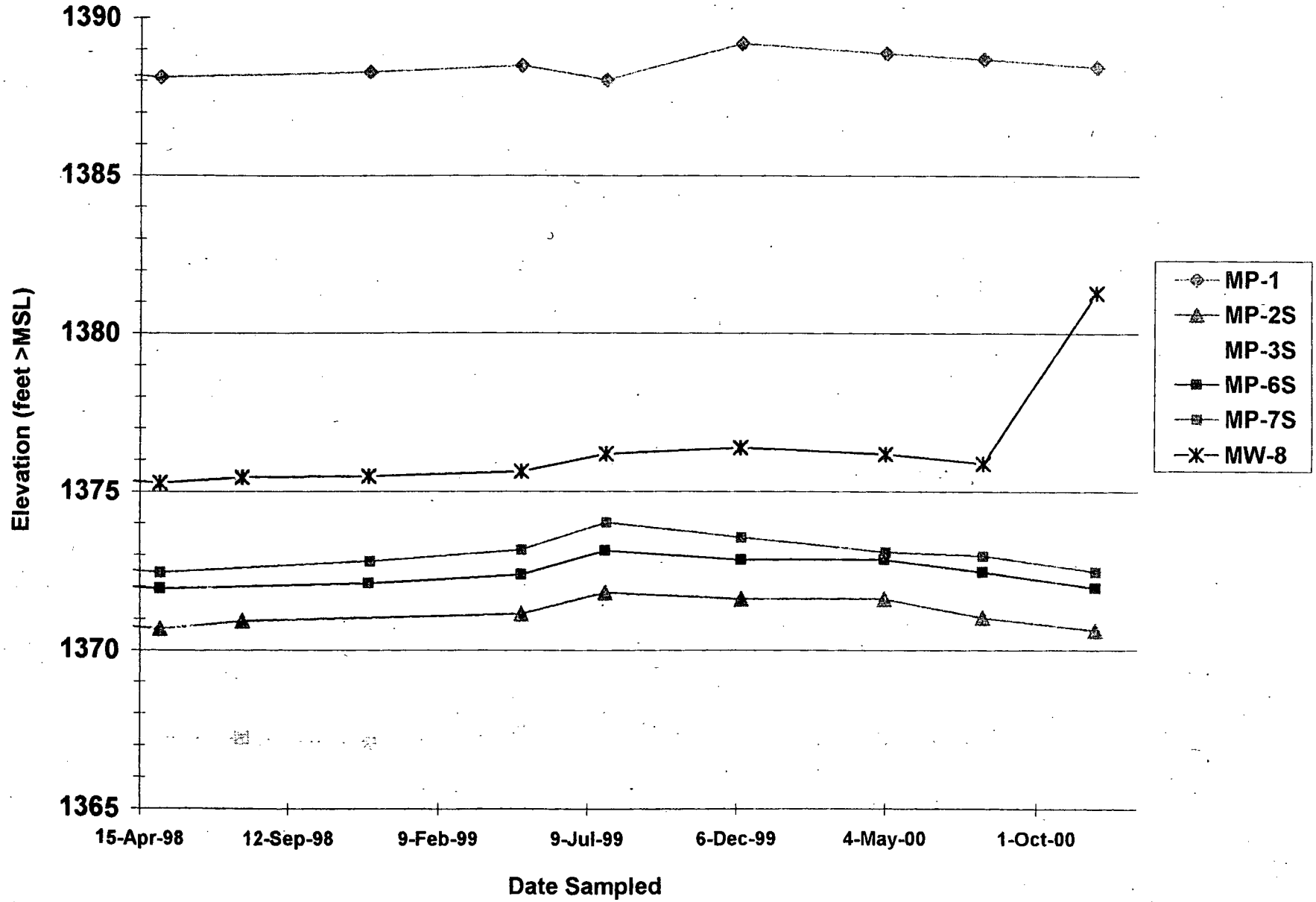


FIGURE 2b
LA GRANDE SANITARY LANDFILL
Elevation of Groundwater in Deep Monitoring Wells

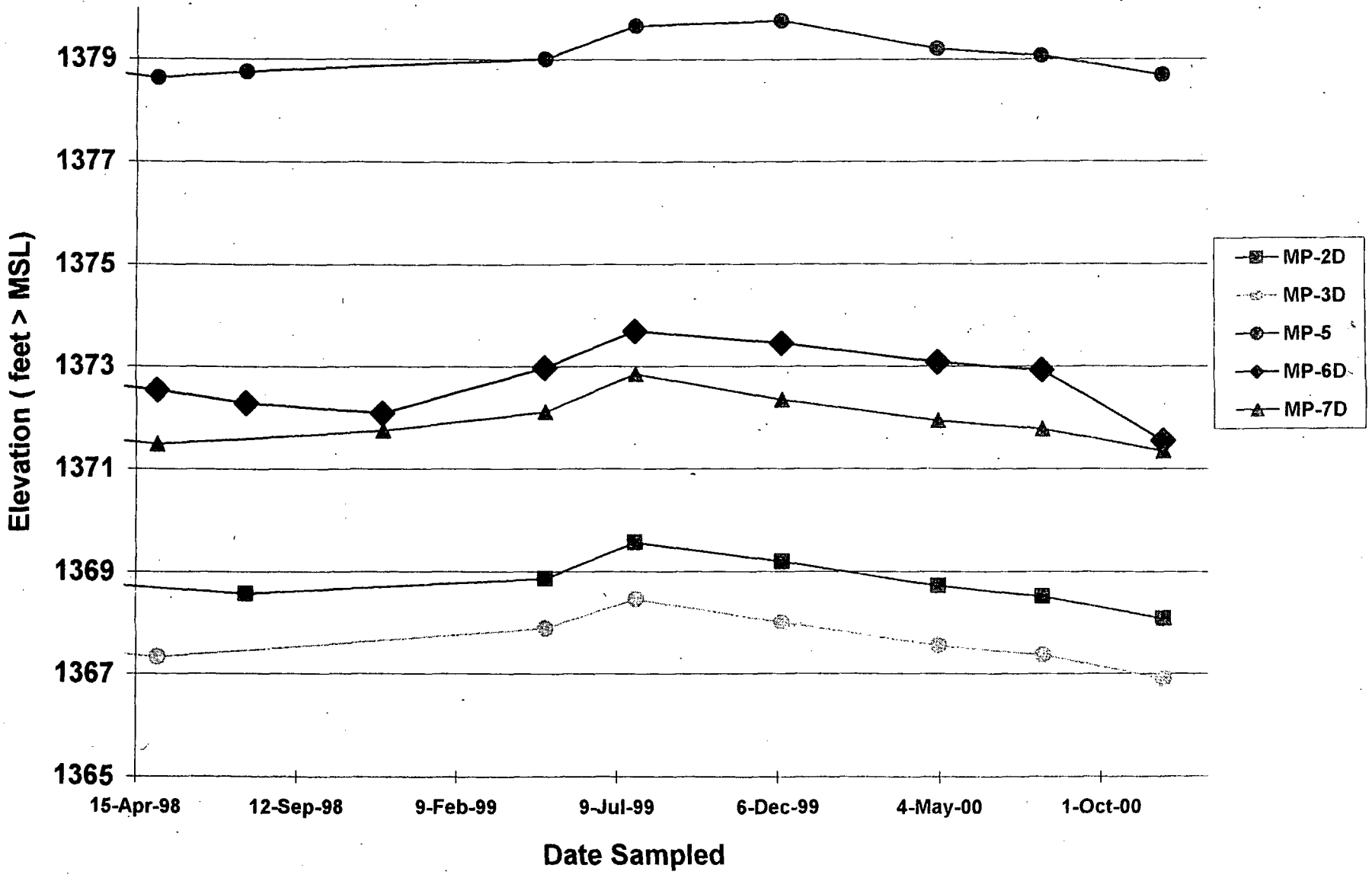
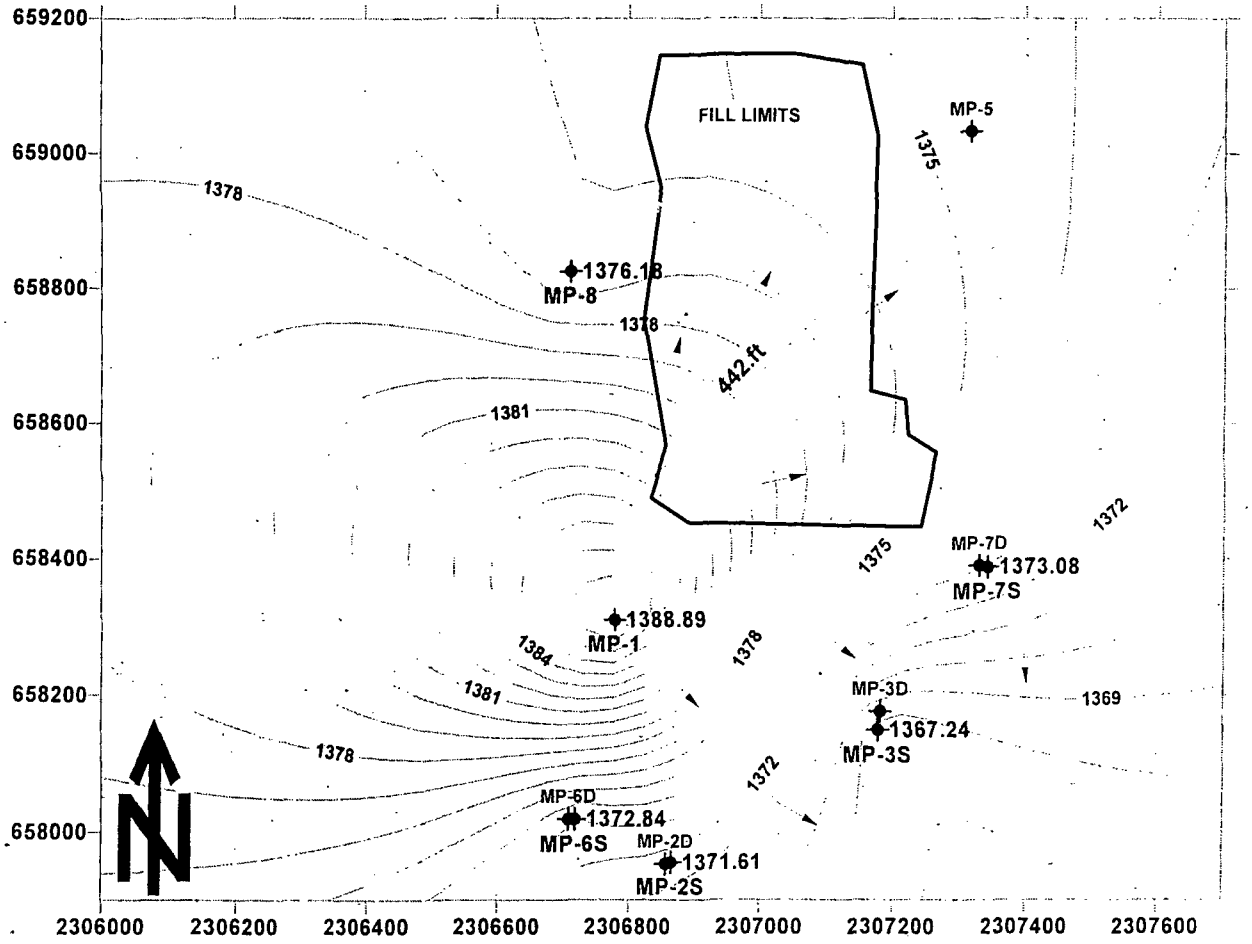


FIGURE 3a
LaGRANDE SANITARY LANDFILL
Direction of Groundwater Flow in Shallow Wells
May 2, 2000

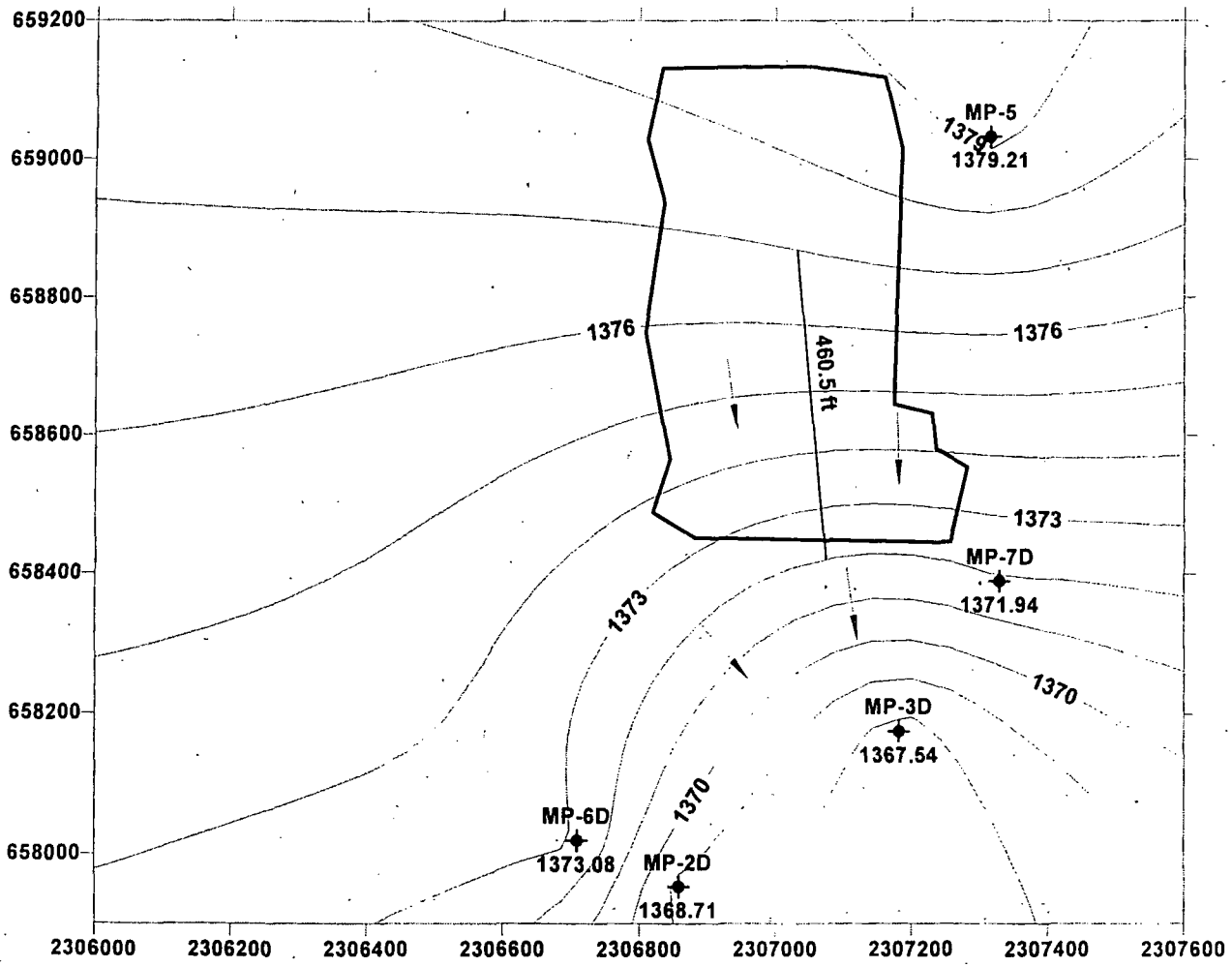


Contour Interval = 1 foot

Horizontal Hydraulic Gradient

$$\frac{5\ \text{ft}}{442\ \text{ft}} = 0.011$$

FIGURE 3b - revised
LaGRANDE SANITARY LANDFILL
Direction of Groundwater Flow in Deep Wells
May 2, 2000

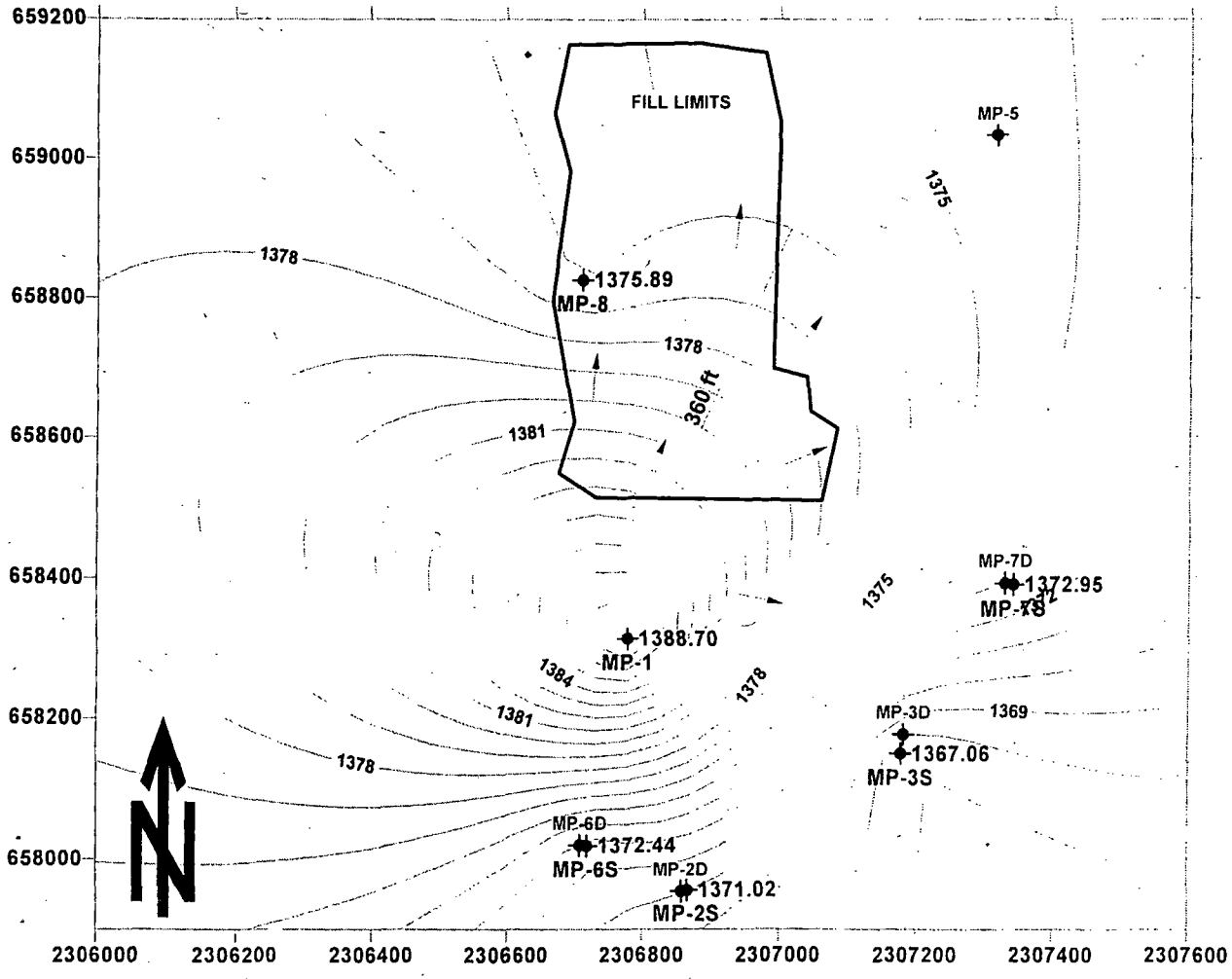


Contour Interval = 1 foot

Horizontal Hydraulic Gradient

$$\frac{6 \text{ ft}}{460.5 \text{ ft}} = 0.013$$

FIGURE 4a
LaGRANDE SANITARY LANDFILL
Direction of Groundwater Flow in Shallow Wells
August 8, 2000

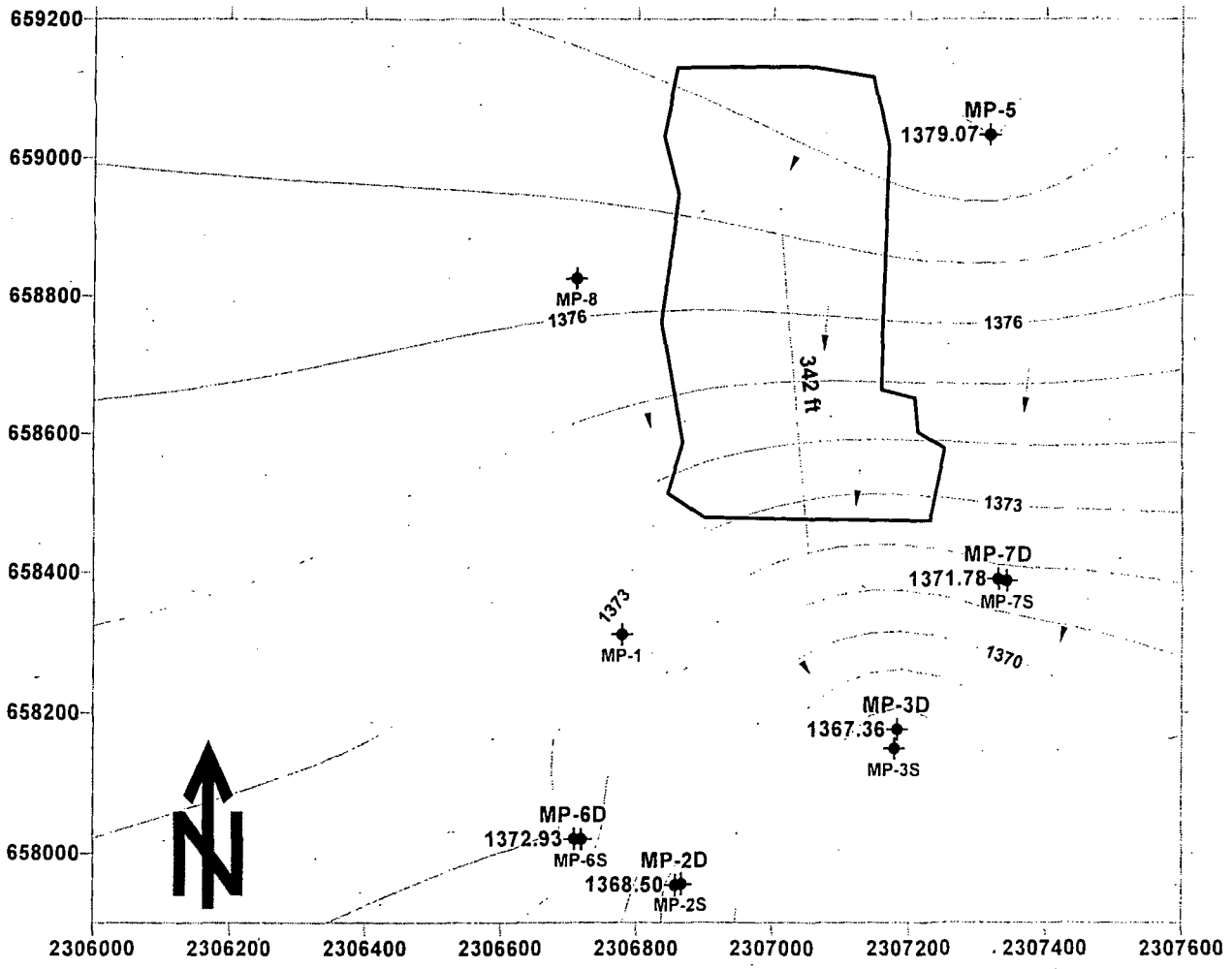


Contour Interval = 1 foot

Horizontal Hydraulic Gradient

$$\frac{7\ \text{ft}}{360\ \text{ft}} = 0.019$$

FIGURE 4b
LaGRANDE SANITARY LANDFILL
Direction of Groundwater Flow in Deep Wells
August 8, 2000

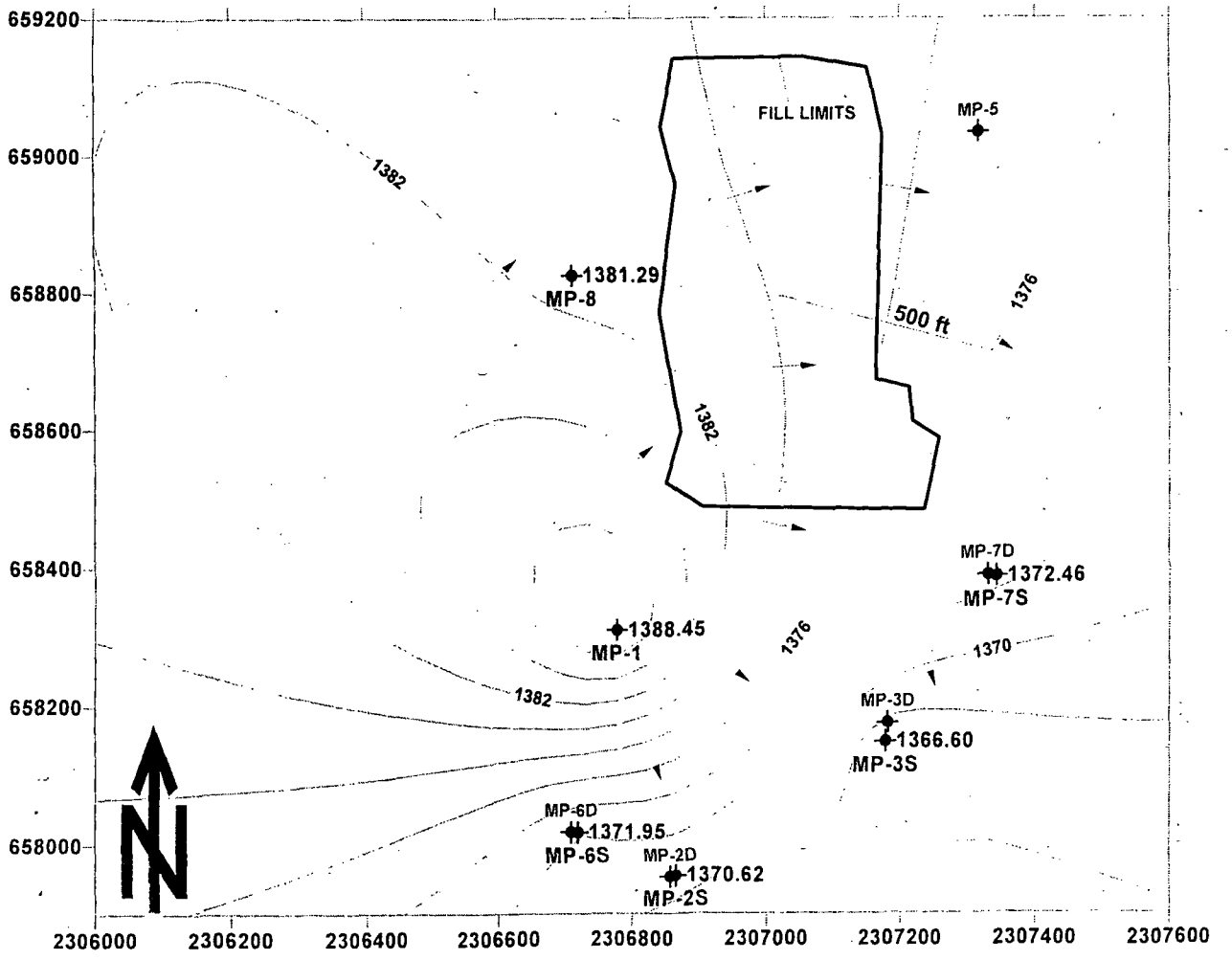


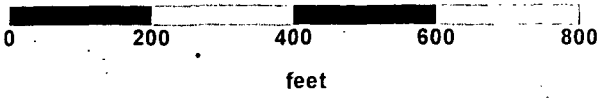
Contour Interval = 1 foot

Horizontal Hydraulic Gradient

$$\frac{5\ \text{ft}}{342\ \text{ft}} = 0.0146$$

FIGURE 5a
LaGRANDE SANITARY LANDFILL
Direction of Groundwater Flow in Shallow Wells
November 28, 2000



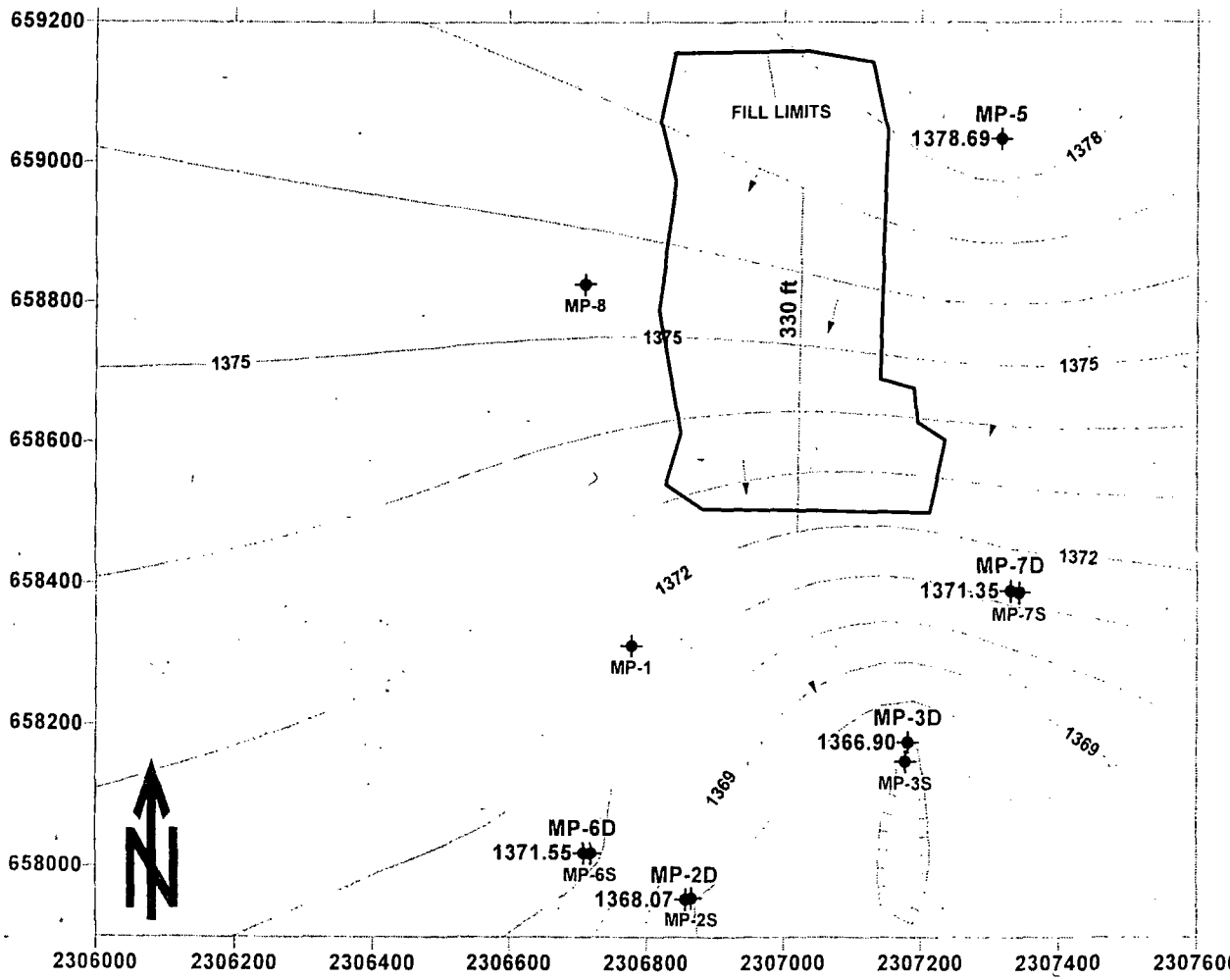


Contour Interval = 2 feet

Horizontal Hydraulic Gradient

$$\frac{4\ \text{ft}}{500\ \text{ft}} = 0.008$$

FIGURE 5b
LaGRANDE SANITARY LANDFILL
Direction of Groundwater Flow in Deep Wells
November 28, 2000



0 200 400 600 800

feet

Contour Interval = 1 foot

Horizontal Hydraulic Gradient

$$\frac{5\ \text{ft}}{330\ \text{ft}} = 0.015$$

FIGURE 6
LA GRANDE SANITARY LANDFILL
Total VOCs in Monitoring Wells

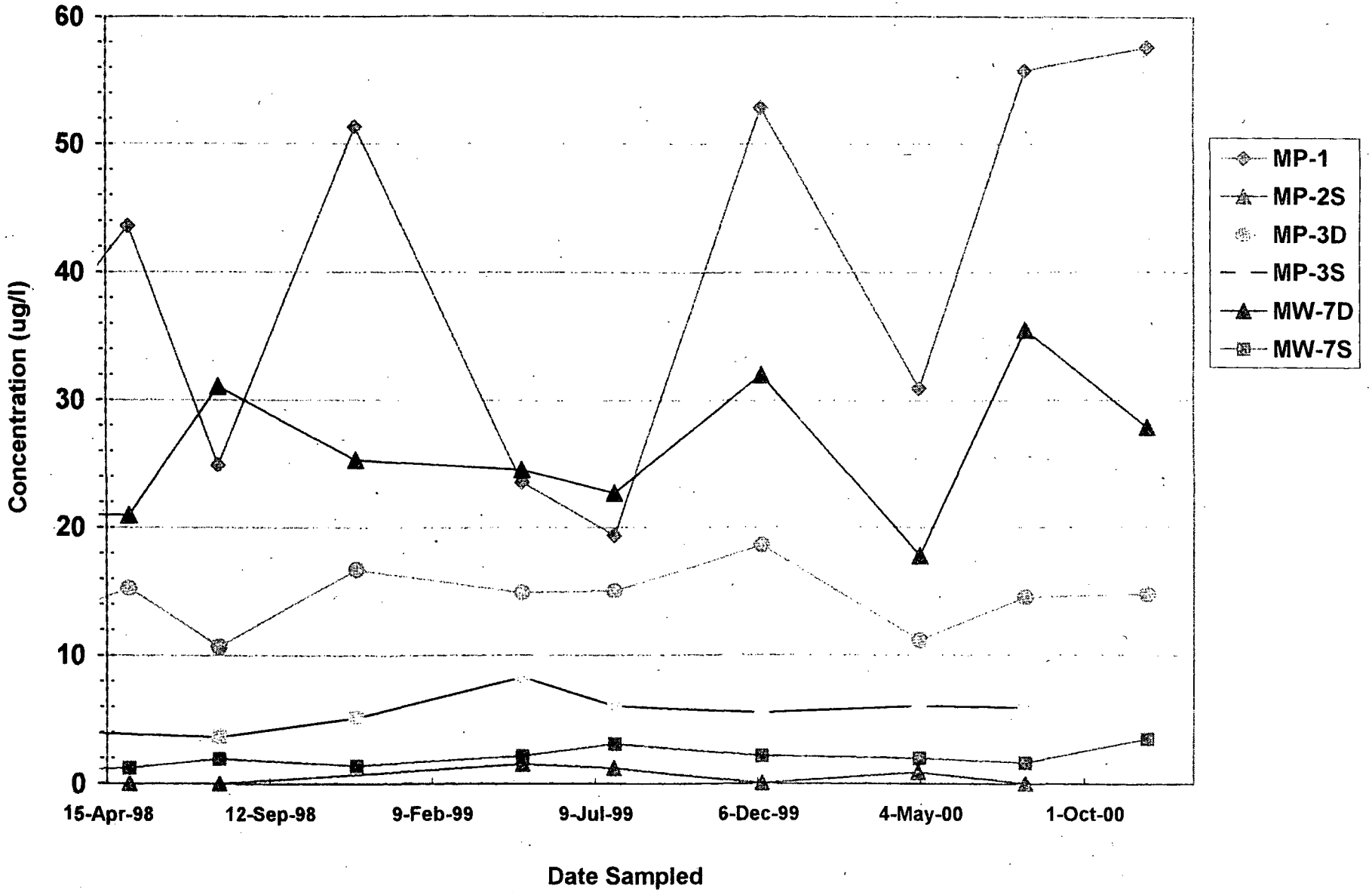


FIGURE 7
LaGRANDE SANITARY LANDFILL
Major Contaminants in MP-1

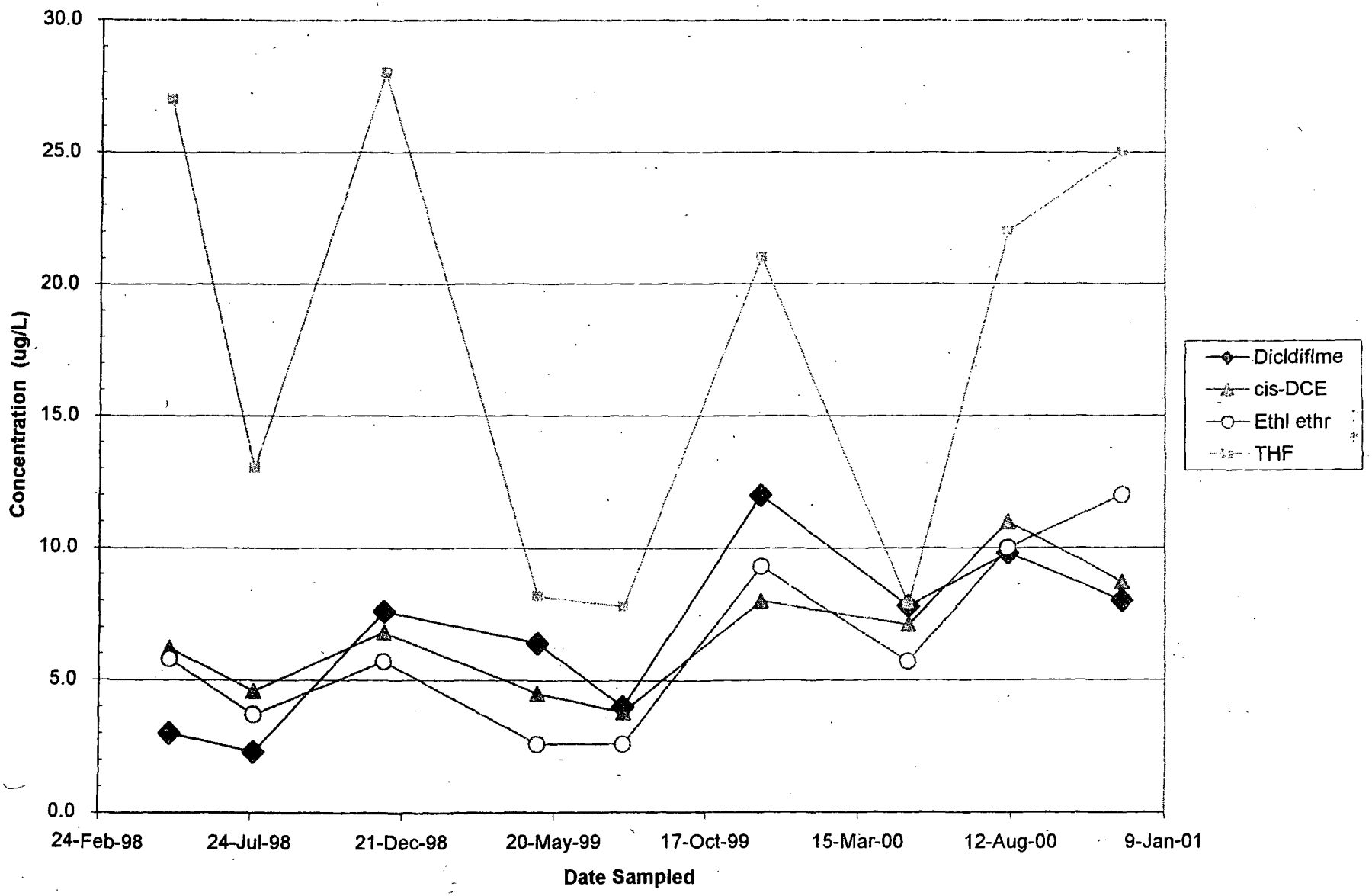


FIGURE 8
LaGRANDE SANITARY LANDFILL
Well Depths Relative to Topography